511

America's Traveler Information Number

Implementation Guidelines for Launching 511 Services

Version 1.0
November 2001

Published by the 511 Deployment Coalition

American Association of
State Highway and
Transportation Officials

E. Dean Carlson, President
Secretary
Kansas Department
of Transportation

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Executive Director

October 25, 2001

Dear Colleagues:

On behalf of the organizations and volunteers of the 511 Deployment Coalition, we are pleased to publish Version 1.0 of the "Implementation Guidelines for Launching 511 Services."

These guidelines are a product of nearly a year's worth of collective efforts from highly professional individuals in the transportation, media and telecommunications industries. Participation from these individuals was carefully solicited to ensure that a wide range of organizational, industry and geographic viewpoints were considered.

If you are planning, designing, implementing or supporting 511 services, we urge you to thoroughly review and incorporate the recommendations in this document into your plans. Each recommendation is the result of thoughtful deliberation and included because of its value and importance.

"Implementation Guidelines for Launching 511 Services" was specifically designed to support the near-term establishment of 511 services. Even the most advanced 511 systems technologically and economically possible today, will likely need improvements and expansion to meet the long-range vision for 511. These guidelines will assist us in moving forward collectively.

If you have questions regarding the guidelines, please contact Jim Wright, 511 Deployment Coalition Staff Director at 651-582-1349 or jim.wright@dot.state.mn.us.

Sincerely,

Elwyn Tinklenberg
Chair, 511 Deployment Coalition (AASHTO)
Commissioner
Minnesota Department of Transportation

Gregory Cook
Vice Chair, 511 Deployment Coalition (APTA)
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Attachment

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Executive Summary

In July 2000, the Federal Communications Commission (FCC) designated 511 as the United States' national traveler information telephone number. The FCC ruling leaves nearly all implementation issues and schedules to state and local agencies and telecommunications carriers. In 2005, the FCC will review progress in implementing 511.

In early 2001, mindful of both the opportunity and challenge 511 presents, the American Association of State Highway and Transportation Officials (AASHTO), in conjunction with many other organizations including the American Public Transportation Association (APTA) and the Intelligent Transportation Society of America (ITS America), with support from the U.S. Department of Transportation, established the 511 Deployment Coalition (Coalition). An executive-level Policy Committee and a supporting Working Group were established to conduct the work of the Coalition. Membership of the Coalition draws from all levels and types of government agencies, various segments of the telecommunications industry and the fields of consulting, system integration and information service provider.

The Coalition has established as its goal "the timely establishment of a national 511 traveler information service that is sustainable and provides value to users." The Coalition recognizes that 511 services will be developed in a bottom-up fashion with state and local transportation agencies establishing services in areas and timeframes determined by them. The Coalition has developed this document, "Implementation Guidelines for Launching 511 Services," to assist implementers in their efforts to develop quality systems and to lay the foundation for ultimately establishing a consistent nationwide 511 service.

These guidelines are designated as version 1.0. The Coalition recognizes that these guidelines are needed and desired as soon as possible by implementers to establish systems that adhere to these guidelines. However, until practical experience is gained through deployment and use, some areas of these guidelines may require modification or clarification. The Coalition plans to continue monitoring and reviewing the guidelines, producing updates as warranted.

The guidelines focus on two main areas – service content and service consistency.

Content Guidelines

Several categories of information, or "content", are candidates to be provided via a 511 service. The overriding philosophy of the content guidelines is that there are two types of content levels:

1. *Basic content* – Content that every 511 system should have. Basic content is the focus of these guidelines.
2. *Optional content* – Additional content beyond basic content provided by a 511 service. Optional content is up to the discretion of the system implementers and can include additional content supported by the public sector and/or private sector supported services.

These guidelines recommend that every 511 system deployed in the U.S. should provide at minimum the basic content as defined in this document. It is this basic content that callers will associate as the core of 511.

Basic content comes in two general categories:

1. *Highway – Information associated with particular roadways in a 511 service area.*
2. *Public Transportation – Information associated with transit services (bus, rail, etc.) in a 511 service area.*

The guidelines describe in detail the types of basic highway and public transportation-related content and also discuss the importance of content quality.

Consistency Guidelines

511 service consistency is important from the perspective of both callers and the FCC. To provide implementers a blueprint as to what they can do to maximize service consistency, the 511 Deployment Coalition has developed guidelines in 14 areas:

1. User Interface
2. Initial Greeting
3. Commercial Advertising and Sponsorship
4. Fee Notification of Premium Services
5. Multi-lingual Capabilities
6. Time stamping of Information
7. System Access Quality
8. Hours of System Operation
9. Americans with Disabilities Act (ADA) Implementation
10. Environmental Justice
11. Use of Standards
12. Privacy
13. 511 Branding
14. Number Allocation and Service Coordination

Though not completed at this time, the Coalition continues to examine and develop guidelines in two additional areas by early 2002:

15. 911 Linkage
16. Inter-regional Interoperability

Resource Information

Information on the 511 Deployment Coalition, its supporting resource materials, and additional useful references for 511 implementers can be found at the following web sites:

- http://www.its.dot.gov/511/511.htm
- http://www.itsa.org/511.html
- http://www.aashto.org
- http://www.atpa.com

I. Introduction

On March 8, 1999, the U.S. Department of Transportation (USDOT) petitioned the Federal Communications Commission (FCC) to designate a nationwide three-digit telephone number for traveler information. On July 21, 2000, the FCC designated 511 as the national traveler information number.

The FCC ruling leaves nearly all implementation issues and schedules to state and local agencies and telecommunications carriers. There are no Federal requirements and no mandated way to pay for 511. Consistent with the national designation of 511, the FCC expects that the transportation industry will provide the traveling public with a quality service that has a degree of uniformity across the country. In 2005, the FCC will review progress in implementing 511.

While the flexibility provided in the FCC ruling is highly desirable, it also presents a challenge. Although there is a great deal of interest in using 511 throughout the U.S., if not thoughtfully planned, 511 services could devolve into an inconsistent set of services widely varying in type, quality and cost.

511 Deployment Coalition Program

Mindful of both the opportunity and challenge 511 presents, the American Association of State Highway and Transportation Officials (AASHTO), in conjunction with many other organizations including the American Public Transportation Association (APTA) and the Intelligent Transportation Society of America (ITS America), with support from the U.S. Department of Transportation, has established a 511 Deployment Coalition.

The goal of the 511 Deployment Coalition is "the timely establishment of a national 511 traveler information service that is sustainable and provides value to users." The intent is to implement 511 nationally using a bottom up approach facilitated by information sharing and a cooperative dialogue through the national associations represented on the Policy Committee, the governing body of the program. The mission of the Policy Committee is to provide guidance on how to achieve this goal.

The 511 Deployment Coalition has developed guidelines on what information should be provided by a basic 511 service (content) and the degree of uniformity and consistency of that service across the country (consistency). A Working Group of managers involved in 511 and traveler information service delivery has been supporting the Policy Committee. The Working Group has studied extensively existing telephone-based traveler information systems and the projected technological, political and economic environments in the near future to develop recommendations for guidelines (see http://www.its.dot.gov/511/511.htm for materials developed or used by the Working Group and Policy Committee in its deliberations). Appendix B contains the rosters of the Policy Committee and the Working Group.

This document provides guidance on 511 content and consistency to implementers.

Purpose of the Guidelines

The 511 Deployment Coalition recognizes that 511 services will be developed in a bottom-up fashion with state and local transportation agencies – with close collaboration of the private sector – establishing services in areas and timeframes determined by them. The positive benefits of this approach are that it enables resources from many organizations to be harnessed to deploy 511 as well as providing many opportunities for innovation in 511 service delivery. A potential negative consequence of simultaneous independent actions is that the resulting services do not, from a caller's or national policy perspective, resemble a well-planned consistent service.

To reduce the chances of service confusion and inconsistency, the 511 Deployment Coalition is establishing guidelines in the areas of content and consistency. ***511 service consistency will be established through implementers following these guidelines, and as an increasing number of services are established, a national 511 service will emerge.***

The 511 Deployment Coalition is very cognizant of the reality that if quality systems don't develop, the transportation industry may lose the privilege of the number. On the other hand, if guidelines suggest services that are cost-prohibitive and unsupportable, the result could be few operating systems, also leading to losing the privilege of the number. Thus, these guidelines are designed from a customer-centric viewpoint while being sensitive to the issues of those agencies that must gather and prepare information and manage information service provision.

The transportation industry has been afforded a tremendous opportunity to better serve its customers. The purpose of these guidelines is to assist transportation agencies in establishing this customer service in the best possible manner. The Coalition and its member organizations strongly recommend that implementers carefully review and consider these guidelines in their implementation planning.

511 Vision: Empowering the "Informed Traveler"

The 511 traveler information system will deliver the information a traveler wants, at the time and location that he or she wants it. The systems will empower travelers to make better decisions, benefiting both the traveler and the transportation network and society at large. The vision of 511 is to serve as the principal audio interface for providing this information to travelers.

In an environment of rapidly changing technology and consumer tastes and needs, precisely pinpointing what a "mature" 511 system is would be nearly impossible. However, key characteristics of successful mature systems will likely include:

- Integrating with other 511 services to achieve nationwide coverage and consistency
- Containing "tiered" services ranging from basic services to premium services, with the premium services offering optional, enhanced services that demonstrate added value to callers
- Providing multiple information services on multiple transportation modes
- Results from a cooperative effort of multiple public agencies and private sector organizations
- Accessibility by all regardless of age, disability, language, or economic means

511 will be "mature" when travelers consider 511 to be a single integrated system – their voice portal to traveler information. An analogy is the Internet. Although it is comprised of millions of independent and interconnected sites, the public views it as a single system – "the Internet."

These "launch" guidelines are intended to aid implementers in establishing initial 511 services. Mature 511 systems will evolve from launch versions, with continuous improvements in areas such as:

- Higher quality information that is more timely, accurate and useful to travelers
- Expansion of system coverage such as more roads covered or more detailed transit reports
- User interface and information delivery advances to increase the ease in which callers obtain information
- More types of content, including the addition of market-supported optional content

An important message to implementers is that their initial 511 service should be continually improved – their 511 launch service should not be viewed as their mature 511 service. The Coalition intends to improve and expand these guidelines as implementers collectively march towards mature systems.

II. Content Guidelines

Several categories of information, or "content", are candidates to be provided via a 511 service. Some of these content categories are typical of what is offered through phone systems in operation today. Other categories are extensions into additional public sector services, while others are the likely domains of private service providers. All of these content categories have been examined and considered in developing the guidelines.

The overriding philosophy of the content guidelines is that there are two types of content levels:

1. *Basic content* – Content that every 511 system should have. Basic content is the focus of these guidelines.
2. *Optional content* – Additional content beyond basic content provided by a 511 service. Optional content is up to the discretion of the system implementers and can include additional content supported by the public sector and/or private sector supported services. Section 4 will provide a summary of some possible optional content categories.

In addition, the guidelines include "implementation recommendations" addressing content topics that have been demonstrated to provide value to callers, but are recognized as difficult to uniformly implement. Therefore, while not explicitly part of the basic content package, these levels of content are recommended as part of 511 systems as they are developed and designed, if possible.

These guidelines recommend that every 511 system deployed in the U.S. should provide at minimum the basic content as defined in this document. It is this basic content that callers will associate as the core of 511.

Basic Content Guidelines

Basic content comes in two general categories:

1. *Highway* – Information associated with particular roadways in a 511 service area.
2. *Public Transportation* – Information associated with transit services (bus, rail, etc.) in a 511 service area.

In each of these content categories, the guidelines provide general principles or philosophies and specific guidance on the type of information that should be provided to callers.

Note that a key concept in 511 service planning is that 511 services must be designed to provide information beyond a single agency, mode or content type.

Highway Content

As the majority of travel in the United States uses highways, information about major roadways should be a principal part of a 511 system. The core of many existing telephone-based traveler information services is highway conditions reporting. As these systems migrate to 511 access and new systems are established, the following guidance should be considered.

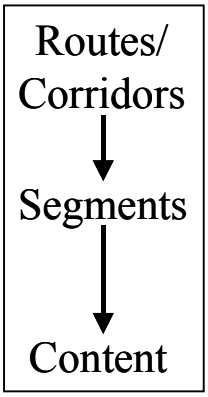
Principles

1. *Content is route/corridor-based* – 511 services should provide information that is retrievable by route number and/or name. In certain circumstances, if one or more principal roads run parallel, it may be acceptable to provide information on a corridor-basis. However, providing information on major roadways on a broad geographic basis (e.g. "roads in the Northwest portion of the state will be…") is not recommended. When a route/corridor is operated by multiple agencies, these agencies should work together to provide an integrated description of conditions.
2. *Limited access roadways and the National Highway System should be the basis for basic 511 highway/roadway-related content* – With 40% of the nation's travel, including 75% of truck traffic and 90% of tourist traffic, the 160,000 mile National Highway System should be the focus of basic 511 content. Limited access roadways that are not part of the NHS, likely to exist in urban areas, should also be part of the basic content. (State-by-state maps of the National Highway System can be found at www.fhwa.dot.gov/hep10/data/data.html).
3. *More detail needed in urban areas* – Given the increased traffic volumes and congestion levels in urban areas, even minor events could have large impacts to travel. Thus, greater content detail is recommended in urban areas.
4. *Content is automated* – Whether the information provided to the caller is a human recorded message, synthesized or digitized speech, the information is stored and automatically provided to callers. There is no direct contact between callers and human operators to provide basic highway content.

Guidelines

The fundamental structure of a telephone system design matches highways very well. Telephone systems are usually accessed through a "menu tree" that is navigated by voice commands or by touching a phone's keypad. Eventually, a caller reaches their desired destination in the system and either gets a recorded or digitized voice message. When seeking highway information, a caller will first find the specific highway or corridor for which they desire information. The caller will then find the specific segment of highway or corridor they are interested in, if it is a lengthy road. Once the 511 service knows the specific section of highway the caller is interested in, it then provides the caller a report of the relevant basic content. This process is graphically illustrated in Figure 1, with "routes," "segments" and "content" serving as the key descriptors of the content guidelines.

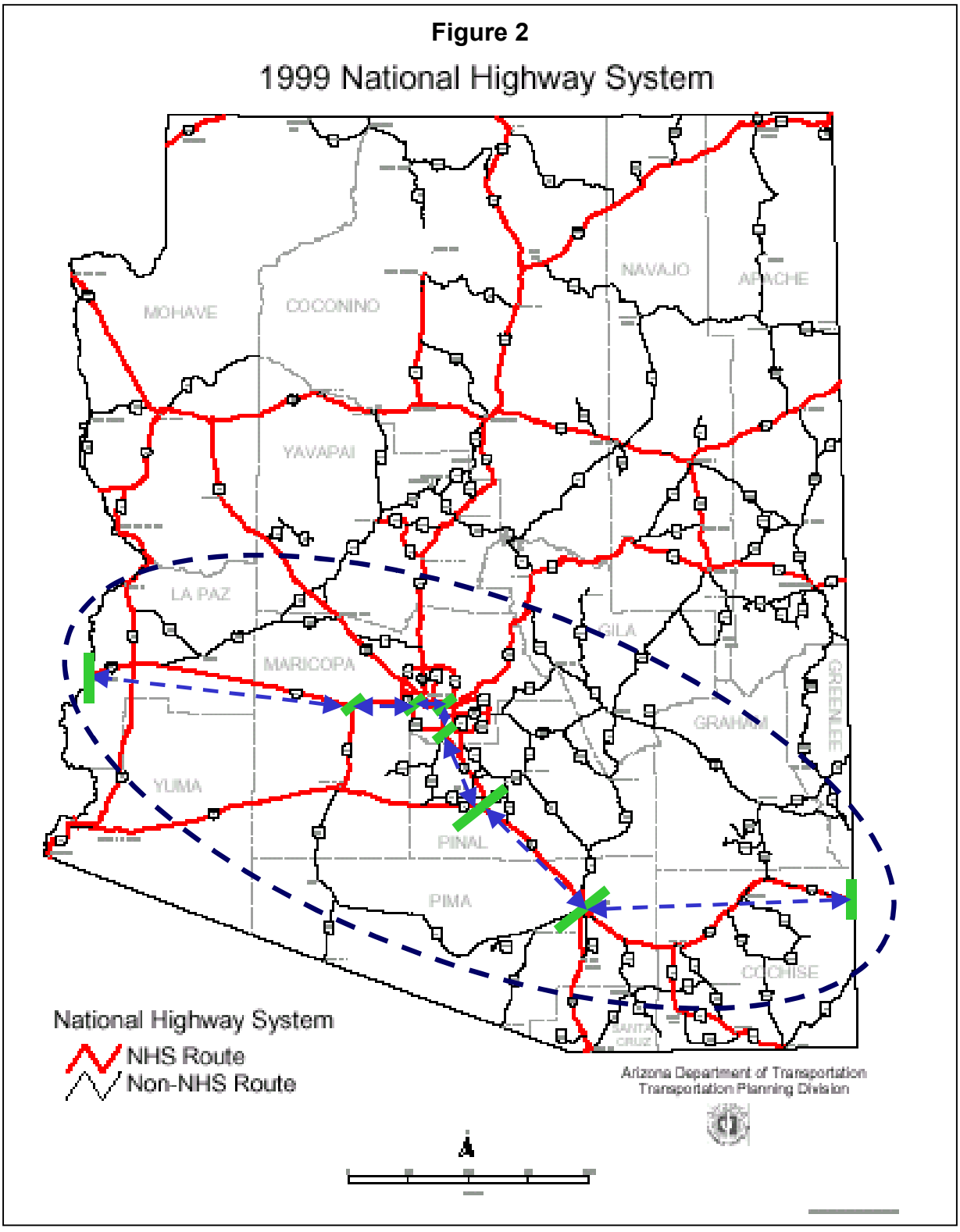
Figure 1



1. *Routes/Corridors* – Information on all National Highway System facilities/corridors should be available to callers. In urban areas, information on all non-NHS limited access highways should also be available to callers.
2. *Segments* – In non-urban areas, long routes should be sub-divided into segments. Segment specification is left to the implementer, but should follow logic with segments defined between major towns, landmarks or roadways. In urban areas, segments should be defined between major interchanges and will generally be smaller in length than non-urban segments.

Figure 2 provides a possible example of segmentation, where I-10 in Arizona contains urban and non-urban segments.

Figure 2



3. *Content* – For each segment, specific types of content should be provided. In non-urban areas, information should include:
   - *Construction/maintenance projects* – Current information on active projects along the route segment that may affect traffic flow and/or restrict lanes.
   - *Road closures and major delays* – Unplanned events, major incidents or congestion that shut down or significantly restrict traffic for an extended period. In urban areas, information on all incidents and accidents, both major and minor, and congestion information along each route should also be provided.
   - *Major special events* – Transportation-related information associated with significant special events (fairs, sporting events, etc.).
   - *Weather and road surface conditions* – Abnormal weather or road surface conditions that could affect travel along the route segment.

   For each of these highway content types, it is necessary to provide details that enable callers to assess travel conditions and make travel decisions associated with a route segment. Table 1 illustrates the detailed information needed for each content type.

Table 1 – Basic Content Detail Needed for Each Highway Content Type

	Geography		Content Detail					
Content Type	Non-urban	Urban	Location	Direction of Travel	General Description and Impact	Days/Hours and/or Duration	Detours/Restrictions/ Routing Advice	General forecasted weather and road surface conditions
Construction/Maintenance	✓	✓	✓	✓	✓	✓	✓	
Road Closures/Major Delays	✓	✓	✓	✓	✓	✓	✓	
Major Special Events	✓	✓	✓		✓	✓	✓	
Weather and Road Conditions	✓	✓	✓		✓			✓
Incidents/Accidents (Minor)*		✓	✓	✓	✓			
Congestion Information*		✓	✓	✓	✓			

* Major Congestion Information and Incident/Accidents are considered part of the "Road Closures/Major Delays" Content Type

- *Location* – The specific location or portion of route segment where a reported item is occurring, related to mileposts and/or interchange(s).
- *Direction of Travel* – The direction of travel a reported item is occurring.
- *General Description and Impact* – A brief account and impact of the reported item.
- *Days/Hours and/or Duration* – The period in which the reported item is "active" and possibly affecting travel.
- *Detours/Restrictions/Routing Advice*. As appropriate, summaries of required detours, suggested alternate routes or modes and restrictions associated with a reported item.
- *General forecasted weather and road surface conditions*. Near-term forecasted weather and pavement conditions along the route segment.

Content Quality

In an increasingly advanced information society, callers are generally accustomed to high quality information. 511 content must be no different. Specifically, 511 implementers must focus on the following quality parameters:

- *Accuracy* – Reports must contain information that matches actual conditions. If the system reports construction events that are not occurring (or worse, does not report a construction event that is occurring) or a road closure is not reported, callers will come to distrust the information provided. If inaccuracies persist, callers will discontinue their use of 511.
- *Timeliness* – Closely related to accuracy, information provided by 511 must be up-to-date. While it is recognized that non-urban areas will have more difficulty collecting, inserting and updating information quickly, every attempt must be made in both urban and non-urban areas to update information as soon as there is a known deviation from the current route segment report.
- *Reliability* – Often, transportation management systems operate during normal working hours. But travelers use highways 24 hours a day, 7 days a week. In fact, often the most challenging travel conditions are at nighttime. Methods must be developed to provide callers a reliable stream of information 24/7. Also, the inherent reliability of the 511 system needs to minimize the amount of time callers will be unable to obtain a report along a route segment due to equipment or process failures.

Information quality is a major concern to the 511 Deployment Coalition. ***The quality of basic content information will largely determine the success of 511.*** 511 services should give callers the ability to gauge the quality of the reported information to enable them to properly weigh the information in their decision-making (e.g. "there is a report of an avalanche…" vs. "an avalanche has occurred…"). However, the Coalition has not included specific quality parameters as part of the Version 1.0 guidelines. This is for two reasons:

1. More collective deployment experience and user feedback is needed prior to determining optimal quality parameters.
2. The Coalition hopes that a special focus on information quality by implementers will lead to quality services.

In future updates to the guidelines, specific quality parameters may be added.

Implementation Recommendations

The following "implementation recommendations" address content topics that have been demonstrated to provide value to callers, but are recognized as difficult to uniformly implement. Thus, providing the following content is recommended to be included in launch services if possible, but not explicitly part of the basic content package for highways. As services improve and evolve towards the long-range vision, these items should be incorporated into the service if not done so at the outset.

- *Segment Travel Times* – Particularly in urban areas, estimated travel times across a route segment have proven highly desirable by callers. Travel times could be provided each in

absolute terms ("segment travel time is 24 minutes") or in terms of delay from normal conditions ("segment travel time is delayed 5 minutes"). In the case of absolute travel times, it is recommended that travel times given do not exceed the speed limit travel time. In urban areas, multi-segment or corridor travel times would also be acceptable.

- *Observed weather and road surface conditions* – Environmental sensor stations (ESS) or Road Weather Information Systems (RWIS) offer the ability to observe weather and road surface conditions at specific locations along a road segment. This data can be utilized to provide much more accurate weather-related information to callers than generalized area forecasts.

Public Transportation Content

Regardless of the size and nature of a 511 service area, there are likely to be one or more public transportation service providers in operation. In many cases, these public transportation operators already have established methods of communicating to the public about their services, including web sites and customer service centers accessible by telephone. If properly utilized and coordinated with these existing communications methods, 511 can assist public transportation operators in better serving their customers and possibly even attract new customers. The following guidelines should be considered when developing the public transportation information component of a 511 service.

There are many different approaches public transportation operators could take to implement their portion of 511 services. These guidelines are intended to maintain this implementation flexibility.

Principles

Information access via telephone has proven to be extremely important in transit customer service. The principal purposes for these services are for general agency and service information, communicating service disruptions and changes, and trip planning.

At the basic content level, 511 can assist in providing callers general agency and service information, and communicating service disruptions and changes. Also, callers could be directed to where they can obtain more detailed information and trip planning.

The following basic principles should be followed:

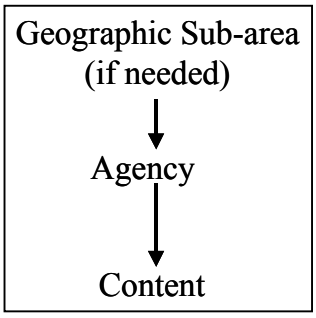
1. *Information on all public transportation agencies in a 511 service area should be accessible* – Often, one or two dominant public transportation agencies exist in an area, but many more exist that collectively provide a region's public transportation system. All of these operators should be accessible via 511. In complex or large geographic areas, it may be necessary to subdivide areas before identifying specific agencies (e.g., the San Francisco bay area currently uses five sub-regions).
2. *511 works in conjunction with existing public transportation customer service centers accessible by telephone* – 511 is not intended to replace these operations, but to provide compatible and supplemental information. Further, the vision is that callers would have direct access to customer service centers via 511.

3. *511 systems should attempt to minimize overload on public transportation customer services centers* – Collective wisdom is that 511 access could increase the number of callers seeking public transportation information. If 511 were merely designed as a shorter number to access the service center, this could significantly increase total calls to the customer service center. However, 511 systems can and should be designed to provide automated messages described in these guidelines that will answer many callers' questions prior to seeking assistance from customer service center operators. Ideally, clever design will reduce the number of calls to be fielded by operators, while increasing the total number of calls successfully managed.
4. *Each agency is responsible for their information* – To ensure information quality and agency autonomy, any information provided via 511 for a particular public transportation operator must be provided or quality-checked by that operator. Agency specific information will be perceived by callers as coming from that agency, thus the agency must either directly provide or ensure the accuracy of the information.

Guidelines

The fundamental structure of a telephone system design matches public transportation operations. Telephone systems are usually accessed through a "menu tree" that is navigated by voice commands or by touching a phone's keypad. Eventually, a caller reaches their desired destination in the system and gets either a recorded or digitized voice message or possibly a live operator. When seeking transit information, a caller will first find the specific agency that operates the service for which they desire information. In complex or large areas, the 511 service area may be segmented in sub-areas to simplify agency identification. Once the 511 service knows the specific public transportation agency the caller is interested in, it then provides the caller a report of the relevant basic content. This process is graphically illustrated in Figure 3, with "geographic sub-area," "agency" and "content" serving as the key descriptors of the content guidelines.

Figure 3



1. *Geographic Sub-area* – In large or complex 511 service areas, the service area can be subdivided for navigating and providing transit reports. This subdivision should be developed locally and represent logical characterization of the service area, such as by travel corridor, geography (e.g., "the northwest suburbs" the "southeastern part of the state") or common name or nickname of a given sub-region (e.g., "Long Island"). Of course, 511 services that utilize sub-areas in their menu will require callers to make at least two navigating commands to select their agency, thus care should be taken so callers can reach their desired report as swiftly as possible.
2. *Agency* – Each agency that provides public transportation services in the 511 service area or sub-area should be accessible. A single report for each agency is the basic guideline. Agencies have the option to add more layers and depth to their content. For public transportation agencies with large or complex operations, a single automated report may either be too long and cumbersome or potentially confusing for callers. Therefore, basic content as described in the following section should be provided in a logically segmented fashion (e.g., by mode or by region).

3. *Content* – For each public transportation agency, the 511 system should have at least a single automated report that provides:
   - *A brief description of the agency's operations*. Quickly address the type of transportation services provided and the geographic are served by the system. For example, "XYZ Transit agency, providing bus service in the greater ACME region". This element must be brief to minimize caller wait time.
   - *Major service disruptions, changes or additions*. Provide information on temporary changes in services (specific routes, vehicles or access), alerts and/or summaries of scheduled services changes, and details of extra services being used for current or upcoming special events.
   - *Where appropriate, an option to be transferred to the agency's customer service center.* It is recommended that direct transfer options be established so that callers will directly transfer to an agency's customer service center without hanging up, essentially creating a seamless system from the caller's perspective. (Note: Care should be taken to understand the call volume of the centers to which the 511 system will transfer calls. It may be necessary to segregate outbound lines that the 511 system will use for this purpose and allocate unique outbound lines for each center. This will help avoid the traffic destined to one call center from saturating the capacity of the 511 system and therefore blocking any additional calls from being directly transferred to other centers.)
   - *Other "broadcast" information that the public transportation operator wishes to provide to callers*. Static information such as special fare and pass information, real-time parking availability information, and the agency's Internet address are a few of the examples of the information an agency could provide via automated messages on 511.

Content Quality

In an increasingly advanced information society, callers are generally accustomed to high quality information. 511 content must be no different. Specifically, 511 implementers must focus on the following quality parameters:

- *Accuracy*. Reports must contain information that matches actual conditions. If the system reports service disruptions are not occurring (or worse, does not report a service disruption), callers will come to distrust the information provided. If inaccuracies persist, callers will discontinue their use of 511.
- *Timeliness*. Closely related to accuracy, information provided by 511 must be up-to-date. While it is recognized that smaller agencies will have more difficulty inserting and updating information quickly, every attempt must be made by both large and small agencies to update information as soon as there is a known deviation from the current report.
- *Reliability*. Methods must be developed to provide callers a reliable stream of information 24 hours a day, seven days a week. Also, the inherent reliability of the 511 system needs to minimize the amount of time callers will be unable to obtain a report along a route segment due to equipment or process failures.

Information quality is a major concern to the 511 Deployment Coalition. ***The quality of basic content information will largely determine the success of 511.*** 511 services should give callers the ability to gauge the quality of the reported information to enable them to properly weigh the

information in their decision-making (e.g. "there is an unconfirmed report of delays on bus routes 7, 12, and 15…" vs. "because of a street blockage on Maple, bus routes 7, 12, and 15 are experiencing delays…"). However, the Coalition has not included specific quality parameters as part of the Version 1.0 guidelines. This is for two reasons:

1. More collective deployment experience and user feedback is needed prior to determining optimal quality parameters.
2. The Coalition hopes that a special focus on information quality by implementers will lead to quality services.

In future updates to the guidelines, specific quality parameters may be added.

Implementation Recommendation

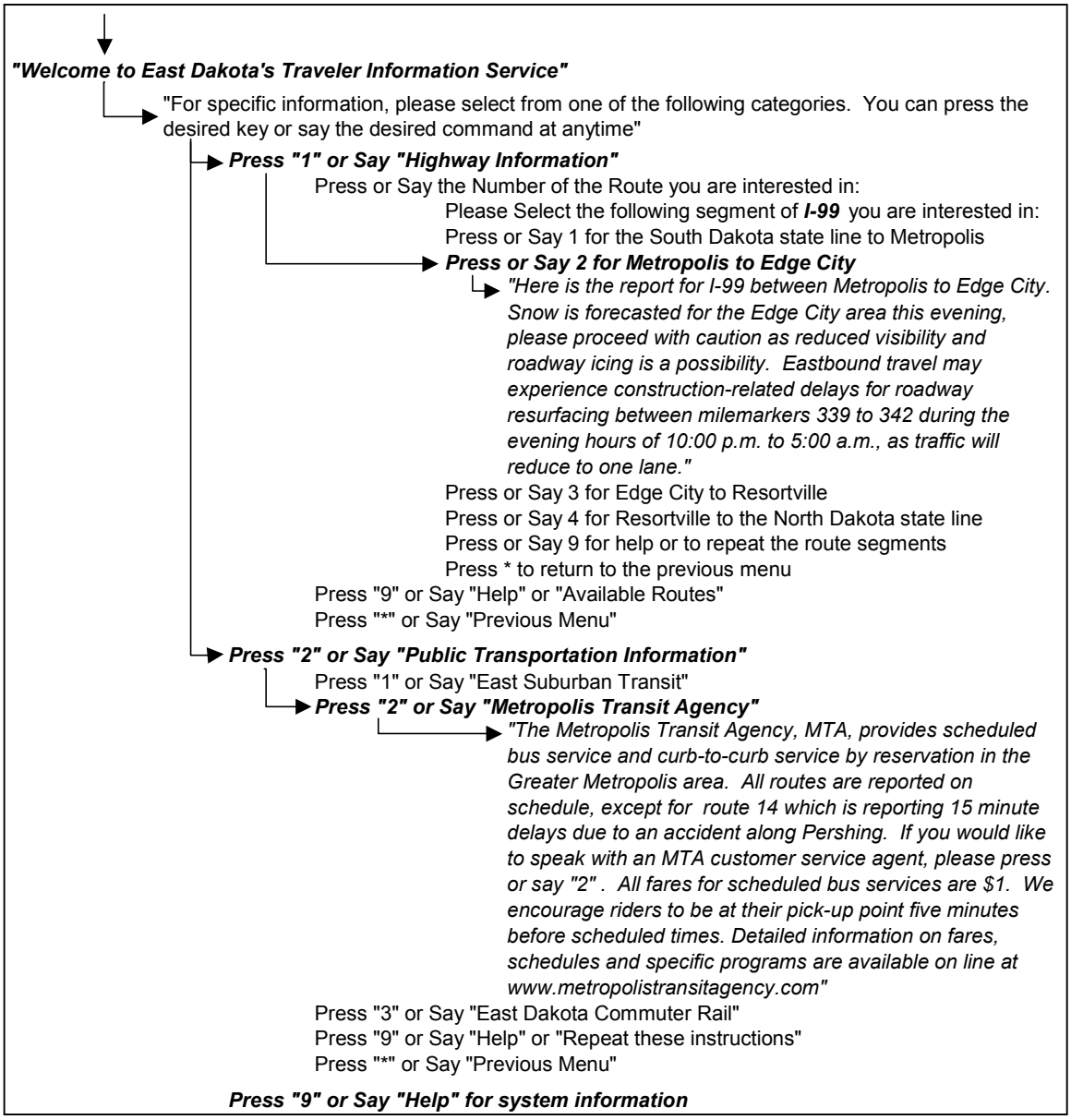
The following "implementation recommendation" addresses a content topic that has been demonstrated to provide value to callers, but is recognized as difficult to uniformly implement. Thus, providing the following content is recommended if possible, but not explicitly part of the basic content package for public transportation.

- *Regional or corridor specific public transportation information.* The basic content guideline for public transportation indicates that each public transportation agency should have automated reports. As technical capabilities and information collection techniques improve, it is desirable in areas served by multiple public transportation providers to allow 511 callers to request information based on a region or corridor, instead of by public transportation provider. Infrequent users may not be familiar with the transit properties that serve their area, and allowing them to request the availability and status of services based on location would permit them to make wiser travel choices. In addition, frequent users may be able to access status information about their usual routes more quickly than hearing a report for the entire transit property.

Example of a Basic 511 System

To illustrate how a "basic" 511 system could operate, the following example is provided. This example, based upon a fictitious implementation in the State of "East Dakota", is for illustrative purposes only. It was not intended to guide user interface designs. It is provided to illustrate the nature of "basic" content. Figure 4 provides a logical progression through both the public transportation and highway content until each reaches an automated report.

Figure 4



Optional Content

As indicated, the 511 Deployment Coalition recognizes that additional content beyond the basic content described in the previous section could be provided by a 511 service. In fact, the Coalition encourages, so long as quality basic content is being provided, that 511 implementers consider providing optional content that will benefit callers.

Again, this optional content is up to the discretion of the system implementers and can include additional content supported by the public sector and/or private sector supported services. Based on local demographics or geography, some of these optional content categories would be expected by local callers. Implementers should factor in this expectation in their service planning process.

In providing additional content implementers have essentially two choices:

1. *Go Deeper* – A richer set of basic services could be provided via 511. For example, information on more highway routes, such as major arterials, could be added to the basic system. Or more detailed content could be provided on public transportation services (e.g., detailed choices for automated messages could be provided – service disruptions may be a different selection than parking availability at a rail station for instance – as opposed to a single automated message). Another possibility is that an agency or region could choose to greatly improve the accuracy, timeliness or availability of their information, improving its quality but not adding further content.
2. *Go Broader* – Many additional content categories have been considered for inclusion in 511 services, but are not part of the basic content package. The following list is representative, but not exhaustive, of the possible optional content categories. Implementers may choose to implement these and other types of content *(Please note that the 511 Deployment Coalition is not assessing the merits of each of these content options, merely providing them for the readers consideration)*:

    - *Tourist Information* – Specific information about local tourist attractions, tourist information centers, convention and visitors bureaus, etc. Could be recorded messages or connections to live operators.
    - *Special Events* – Information pertaining to major special events occurring in a service area. The information may go beyond transportation-related information to include event-related information such as times, locations, event descriptions, etc.
    - *Parking* – Parking location and possibly parking lot status information.
    - *Local Information/Points of Interest* – Information such as restaurant locations, gas stations, taxis etc. Could be extended to include reservation services.
    - *Interregional Information* – Information pertaining to transportation conditions in other, perhaps adjacent, regions. Examples include extension of an interstate travel corridor or a major city in an adjacent state.
    - *Driving Directions* – In a voice-activated 511 service, callers can provide their location and their desired destination and obtain driving directions. These directions could be based upon real-time conditions and/or can include estimated trip travel time if such information is available.

- *Public Transportation Trip Itinerary Planning* – In either a voice activated or operator-assisted environment, callers can obtain transit trip plans that could include routes, transfers, costs and trip times.
- *Multimodal Routing and Trip Planning* – Integrating information from multiple modes (highways, transit, rail, air, etc.), callers can obtain a complete trip itinerary that is as efficient as possible, regardless of mode.
- *Incident Reporting* – 511 is intended primarily as an information source for callers. However, systems can be designed such that callers could report incidents through 511 as well, either by communicating directly with an operator or by leaving a voice message.
- *Local Transportation Facilities Information* – Callers can obtain information about major transportation facilities in the 511 service area, including airports, train stations, ferry, freight, and cruise ports. Information could include parking and traffic conditions associated with the facilities.
- *Local Transportation Services Information* – Callers can obtain information on transportation programs in the 511 service area, such as carpools and vanpools.
- *Concierge Services* – Human operators can provide any of the above information to callers. These operators could also handle additional services, such as reservations and purchases.
- *Personalized services* – Callers can provide profiles of their normal travel patterns and the system, by recognizing the phone number of the caller, can provide a complete report along the caller's route (e.g., the conditions on a commuters complete normal route), without requiring callers to locate and review reports on multiple route/corridor segments.

In examining the addition of optional content, system implementers should be careful to design a system that complements – rather than diminishes – the impact of the basic content services.

III. Consistency Guidelines

511 service consistency is important for at least two reasons:

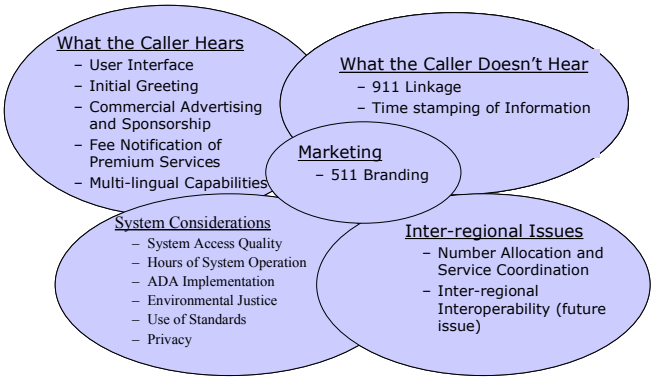
1. In its order, the FCC "encourage[s] federal, state, and local government transportation agencies to work cooperatively to ensure that the transportation information provided using 511 is appropriate to the national scope of our designation and the scarcity of the N11 public resource." ***In other words, the FCC expects the transportation industry to deliver a consistent 511 service nationally.***
2. With the possibility for the first time of dialing the same number for information in multiple regions, consumers could expect similar service in regions served by different systems. In fact, the traveling public is likely to be completely unaware that 511 services are separate systems. ***In other words, callers will likely expect and even demand consistency of 511 services.***

To provide implementers a blueprint as to what they can do to maximize service consistency, the 511 Deployment Coalition has developed these Consistency Guidelines. These guidelines represent the culmination of nearly a year long process and have been developed based on a philosophy of providing flexibility to implementers at this early stage while ensuring that callers will recognize the services as part of a national system. But the need for the "look and feel" of basic 511 services to be the same no matter where a customer accesses the service is of utmost importance.

These guidelines are written to balance these twin desires of implementation flexibility and consistent caller experience.

Sixteen issues, grouped into five logical categories, comprise the guidelines. These categories are:

- What the caller hears
- What the caller doesn't hear
- System considerations
- Marketing
- Inter-regional issues



These categories are used as a tool for presenting the 16 issues in logical groupings. These category headings have no special meaning in and of themselves.

In this section each issue will be briefly described and the recommended guidance will be provided. Short background papers have been developed for each issue describing the issue, the options and the rationale for the guideline further, as well as providing or referencing additional supporting information. These papers can be found on-line at http://www.its.dot.gov/511/511.htm.

1. What the Caller Hears

1.1. User Interface

Issue: The ease and methods of access callers have to desired information once a call is initiated.

Guideline: Implementers are encouraged to use voice recognition as the primary user interface. For voice activated systems, the following top-level commands should be used when a system has the relevant information available *(this is based upon the current draft content* guidelines): "Transit Information", "Highway Information", "Airport Information", "Rail Station Information" and "Ferry Information". Top-level menu commands beyond the basic services are acceptable. Care should be taken when adding additional top-level commands to select descriptive terms and not to conflict with the basic terms noted here.

Although discouraged as a primary user interface means, systems that utilize keypad entry for navigation should use the following top-level menu tree: 1 for "transit information", 2 for "highway information" and 9 for "help using the system". Although not defined as part of the basic content package, 3 should be reserved for "airport and other major terminal and transportation facility information." Systems that use both keypad entry and voice activation should allow callers to press or say the top-level number ("press or say 1 for transit information").

Overly complicated menu trees should be avoided. Systems should not require the user to make more than 3 entries or replies before providing the desired information. At each level, no more than 6 options should be listed.

"Shortcuts" are used often by repeat callers that know what element of information they are seeking. The use of shortcuts is encouraged. It is possible that a future update of these guidelines could include specific guidance on shortcut methods, but no detailed guidance is given at present.

1.2. Initial Greeting

Issue: What the caller hears upon starting a call.

Guideline: Based on focus groups, the initial greeting should be very short, such as "Welcome to (metro area's, state's, or program name's) 511 for Traveler Information." Customers expect a short verification that they dialed correctly, but comment that they do not want a lengthy introduction or long formal enunciation of agency names. Supplemental information such as website addresses or complete help instructions should not be included in the initial greeting but provided through menu selections. In the cases of major emergencies, an emergency message can be provided prior to or in place of the normal initial greeting.

1.3. Commercial Advertising and Sponsorship

Issue: The parameters that should be used when a 511 service included commercial advertising and/or sponsorship.

Guideline: Commercial advertising and sponsorship of 511 services, either in an initial greeting or in conjunction with a specific element of a 511 service is acceptable. However,

care should be given to ensure that the length of messages does not overly inconvenience callers and that the content of messages are consistent with the public service nature of 511. This guidance applies to the initial greeting and messages prior to the caller getting the information they are seeking.

1.4. Fee Notification of Premium Services
Issue: informing callers when they are seeking fee-based information or services.
Guideline: If a 511 service offers premium content – content beyond the basic content – options for accessing this content should be provided after basic content access options. If offered for a fee, callers must be informed when they have selected a premium content or service and what the cost of the content or service is prior to usage. Callers must opt-in before charges are incurred.

1.5. Multi-lingual Capabilities
Issue: access to 511 services for Limited English Proficient (LEP) callers.
Guideline: 511 Implementers should review Executive Order 13166, signed by President Clinton August 11, 2000 and the supporting "Guidance to Recipients on Special Language Service to Limited English Proficient (LEP) Beneficiaries" issued by U.S. DOT January 22, 2001 to determine its applicability.

2. What the Caller Does Not Hear

2.1. 911 Linkage
Issue: How 511 services should provide linkage to 911 services.
Guideline: The Coalition is working to develop guidance on this issue. The Coalition is sensitive to the desires of public safety advocates and shares their desire to ensure that all calls intended for 911 reach their destination. The Coalition also recognizes the possible technical and cost complexities that 911 transfers could place on 511 systems as well as possible legal and regulatory issues that must be addressed. To further examine these issues, a special task force of transportation, telecommunications, and public safety experts are presently reviewing the issues and the Coalition intends to provide guidance on this issue in Spring 2002.

2.2 *Timestamping of Information*
Issue: Providing time/date identifier to provide callers with sense of reliability and accuracy of the information provided.
Guideline: Caller expectations are for timely information. If a 511 system provides basic content quality as defined in the content guidelines, then timestamping the information is unnecessary and undesirable. If a system knowingly provides information that is updated not as conditions change, but based upon a periodic schedule, then the schedule should be communicated to callers in association with the particular message.

3. System Considerations

3.1. System Access Quality
Issue: The ability of the telephone system to reliably and quickly answer calls.
Guideline: 511 systems should be sized to accept all calls for the 90th percentile peak hour load[1]. If live operators are utilized or connected to as part of a 511 service, 90th percentile wait time should not exceed 90 seconds, and callers should receive indications that they are on hold. 511 services should have an availability to callers of 99.8% (out of service less than 18 hours a year). System performance against these parameters should be measured and monitored.

3.2. Hours of System Operation
Issue: The days and hours 511 service should be available to callers.
Guideline: 511 systems should be available 24 hours a day, 7 days a week. It is recognized that systems will not always be "operated" 24/7. In instances when the system is providing static, pre-recorded messages, systems should inform the caller that it is outside normal operating hours.

3.3. ADA Implementation
Issue: Complying with accessibility laws and regulations.
Guideline: 511 implementers need to consider that under Section 255 of the Telecommunications Act of 1996, carriers and equipment manufacturers must provide access to and make their services and products usable by individuals with disabilities, "if readily achievable." Title II of the Americans with Disabilities Act prohibits public entities (states, local governments, and any department, agency, or other instrumentality of state or local government) from discriminating against those with disabilities in all services that they provide to the public. 511 implementers should include in their design plans how they intend to provide access to these services to the disabled community, such as through the carriers' existing TRS or TDD capabilities.

3.4. Environmental Justice
Issue: The relationship of 511 and environmental justice principles that prevent discrimination against minority and low-income populations.
Guideline: The Civil Rights Act of 1964 and a 1994 Presidential Executive Order address the Federal governments responsibilities to assure that programs or activities receiving federal financial assistance adhere to environmental justice principles that prevent discrimination against minority and low-income populations. 511 services that use Federal funds must adhere to these rules.

[1] This means that for 90% of the time (21.6 hours of the day, 7884 hours of the year, etc.), a 511 system should have the system capacity to handle 100% incoming calls. This guideline recognizes that extreme conditions will occur periodically that will increase demand well beyond "normal peak" calling. In those circumstances, it is in not unreasonable to ask callers to re-dial to access the service.

3.5. Standards
Issue: 511 and National ITS standards.
Guideline: Significant resources have been invested to develop ITS standards that will simplify and expedite the deployment of interoperable systems. 511 implementers should review the full range of standards available and consider using those that will aid in cost-effective system development and/or inter-system interoperability.

3.6. Privacy
Issue: Privacy protections for callers.
Guideline: 511 services should adhere to ITSA's Fair Information and Privacy Principles.

4. Marketing

4.1. 511 Branding
Issue: the creation of a brand identity for 511 services to manage consumer expectations.
Guideline: The 511 designation is a brand like "Intel inside." Local implementations of 511 should incorporate whatever collateral (greeting, logos, signage, etc.) the national effort develops in conjunction with the local ATIS brand that is being marketed. 511 callers must realize that the local 511 implementation is part of a national program with certain requirements for quality and content.

5. Inter-regional Issues

5.1. Number Allocation and Service Coordination
Issue: Organizing and coordinating transportation agencies in a given region to determine what 511 services will be offered, by whom and in what geographic area(s).
Guideline: State Departments of Transportation should accept the lead facilitating role for planning how 511 services will evolve in their state. In this role, state DOTs should work closely and in partnership with other transportation operators in their state. State DOTs should also lead coordination efforts with the state's public utilities or service commission. In regions where multi-state cooperation is logical, state DOTs should coordinate with one another so that service regions make sense to callers.

5.2. Inter-regional Interoperability
Issue: How 511 services interconnect.
Guideline: This issue has been flagged as a future issue, but one in which a guideline cannot be established at this time.

IV. Monitoring and Updating the Guidelines

These consistency guidelines are designated as version 1.0. The 511 Deployment Coalition recognizes that these guidelines are needed and desired as soon as possible by implementers to establish systems that adhere to these guidelines. However, until practical experience is gained through deployment and use, some areas of these guidelines – some things that are in the guidelines and some things that have been omitted – may require modification or clarification.

The Deployment Coalition plans to continue to monitor and review the guidelines, producing updates as warranted.

If implementers have suggestions for improvements, please provide this information electronically to "511feedback@aashto.org".

V. Additional Issues

This section provides additional background information that may be of use to implementers when determining the content a 511 system will provide. Though surely not exhaustive, these areas have been uncovered in the development of these guidelines as areas to consider:

1. *Usage Monitoring*. Applications are commonly used in computer telephony systems to provide detailed and summary usage statistics. Implementers should consider employing such usage monitoring systems to obtain information about patterns of usage of different parts of the 511 system. This information can be used for many purposes, such as identifying high priority areas that must be maintained at the highest quality or identifying little used areas that may suggest either design flaws or information quality problems. Gathering usage data and continually assessing system performance based upon this data will go a long way toward ensuring services meet caller needs.
2. *Standards*. The ITS program has invested considerable resources in the development of national standards to facilitate the efficient exchange of information. Some of these standards, consistent with the national ITS architecture, could be quite beneficial to system implementers by reducing the time and resources required to share information between transportation management systems and the 511 support systems. Existing standards that should be examined include the ATIS and ATMS data dictionaries and several "business area standards" from the Transit Communications Interface Profiles (TCIP) family of standards. An example of how these standards can help is the ATIS Data Dictionary, which includes binary codes for over 1,500 types of highway event "descriptors." These codes could be programmed in both the management systems and 511 equipment and only binary codes would need to be transferred between systems to provide information necessary to create route-segment reports. This also has the benefit of largely standardizing the reports that callers hear, aiding their understanding of reported information. The central focal point for ITS standards information is http://www.its-standards.net/.
3. *Enabling feedback from callers*. Some existing telephone systems have methods such as voice mailboxes that enable callers to provide feedback on the quality of the service and to offer suggested improvements. Implementers should consider incorporating such a feature into their 511 systems as it gives a direct feedback mechanism from callers. However, care should be taken to distinguish this service from the "Incident Reporting" optional content described in section 4, which would, where implemented, enable callers to provide real-time or near real-time condition reports to transportation managers.

Appendix A – 511 Deployment Coalition Policy Committee and Working Group Rosters

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